



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/572,855

03/22/2006

Munekatsu Shimada

072280-0013

9266

20277 7590 11/24/2009
MCDERMOTT WILL & EMERY LLP
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER

KIM, JOHN K

ART UNIT

PAPER NUMBER

2834

MAIL DATE

DELIVERY MODE

11/24/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/572,855	Applicant(s) SHIMADA ET AL.	
	Examiner JOHN K. KIM	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 6-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

1. In view of amendments, the Examiner withdraws the rejection under 35 USC 102(b) and the rejection under 35 USC 103(a) to claims 1-5. However, claims 1-5 are not in a condition for allowance in view of new ground of rejection. The applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. The claim 1 has been amended. In view of amendment, the examiner reviewed amended claims and remarks as follows.
2. In amendment, the applicant added "(a layer which is work hardened) due to a compression residual stress having added thereto, said compression residual strength (stress) caused by applying a laser peening of irradiating at an angle relative to the inner circumference of the magnet insertion window with a laser through a liquid". The limitation of 'compression residual stress' is considered a process resulted from claimed apparatus. The process is anticipated by the inherency of the cited prior arts which teach the same structure as claimed. MPEP 2112.01.

2112.01 Composition, Product, and Apparatus Claims

I. PRODUCT AND APPARATUS CLAIMS — WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED TO BE INHERENT

3. Claim 1 recites "by applying a laser peening of irradiating at an angle relative to the inner circumference of the magnet insertion window with a laser through a liquid". The angle referred in the claim can be any degree of angle. The applicant argues the prior art (US 2003/0201685 to Shimada et al) failed to teach 'an angle' since Shimada

Art Unit: 2834

teaches 'orthogonally' irradiated. However, the angle in the claim includes any degree of angle including 90 degrees. Note that the claim does not define range of the angle.

Claim Objections

4. Claim 1 is objected to because of the following informalities: The claim recites "a layer which is work hardened due to a compression residual stress having added thereto, said compression residual strength (stress) caused by applying a laser peening of irradiating at an angle relative to the inner circumference of the magnet insertion window with a laser through a liquid". What said is 'compression residual stress' not 'compression residual strength'. The examiner regards it is a minor typo. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimada et al (US 2003/0201685).

As for claim 1, Shimada shows (in Figs. 1-25) and discloses a rotor using an electrical steel sheet with low iron loss, the rotor comprising: a bridge side (16, 12) on an inner circumference of a magnet insertion window (2, 3) of said rotor having a layer which is work hardened [0068, 0196] by applying a laser peening of irradiating at an

Art Unit: 2834

angle relative to the inner circumference of the magnet insertion window with a laser through a liquid to transmit a shockwave resulting from a high pressure plasma produced over said bridge side by said laser to said bridge side (Fig. 4) [0071].

The limitation “(a layer which is work hardened) due to a compression residual stress having added thereto, said compression residual strength” is inherent result from the same structure as claimed. See MPEP 2111.01. The compression residual stress is virtual matter and is considered inherently produced when applying a laser peening of irradiating at an angle relative to the inner circumference of the magnet insertion window with a laser through a liquid.

As for claim 2, Shimada teach the claimed invention as applied to claim 1 above. Shimada further teaches (in Figs. 1-2) said bridge side (12) irradiated with the laser is a region where a high stress occurs due to centrifugal force acting on a magnet when said rotor rotates. [0102]

As for claim 3, Shimada teach the claimed invention as applied to claim 1 above. Shimada further teaches (in Fig. 1) a magnet of said rotor for each pole is divided into a plurality of pieces. [0120, 0136]

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2834

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable Shimada et al (US 2003/0201685) in view of Edwards et al (US 6848495).

As for claim 4, Shimada teaches the claimed invention as applied to claim 1 above. Shimada however is silent to show or disclose said bridge side has a step. In the same field of endeavor, Edwards shows (in Fig. 6) and discloses bridge of rotor slot side (506) has a step. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have bridge side has a step by combining the teaching of Edward with that of Shimada for predictable result of preventing the leaking or seeping of the molten material from between the stacked laminations (col. 7, line 18-20).

As for claim 5, Shimada in view of Edwards teaches the claimed invention as applied to claim 4 above. Edwards further shows (in Figs. 6-7) and discloses said step (506) is located on one side or each side.

Alternative Rejections

10. Claims 1-2 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable Nakamura (JP 11018324, see attached English translation) in view of Clauer et al (US 2003/0024915).

As for claim 1, Nakamura shows (in Figs. 1-2) and discloses a rotor using an electrical steel sheet with low iron loss, the rotor (10, Fig. 1) [0003] comprising: a bridge side (20) on an inner circumference of a magnet insertion window (16) of said rotor having a layer which is work hardened by applying a laser peening of irradiating at an angle relative to the inner circumference of the magnet insertion window with a laser to transmit a shockwave resulting from a high pressure plasma produced over said bridge side by said laser to said bridge side [0021]. Nakamura however is silent to disclose a layer which is work hardened due to a compression residual stress having added thereto, said compression residual strength caused by applying a laser peening of irradiating at an angle relative to the inner circumference of the magnet insertion window with a laser through a liquid.

In the same field of endeavor, Clauer shows (in Fig. 14) and teaches [0107, 0116] a workpiec (110) is work hardened by applying a laser peening (106) of irradiating at an angle relative to the inner circumference of the magnet insertion window with a laser through a liquid [0110, 0115] to transmit a shockwave resulting from a high pressure plasma produced over workpiece (110). Clauer further shows (in Figs. 2a, 13) and teaches [0116] a workpiece (110) is work hardened due to a compression residual stress having added thereto, said compression residual strength caused by applying a

Art Unit: 2834

laser peening of irradiating at an angle relative to the workpiece (110) [0117, 0124].

However, it has been anticipated as the cited prior arts teaches the same structure as claimed regardless the teaching of Clauer. MPEP 2112.01. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Clauer with that of Nakamura to apply laser peening of irradiating a laser through a liquid to the bridge side for predictable result of hardening the magnet window since Clauer teaches a suitable solid structure can also be treated by the laser shock processing [0118].

As for claim 2, Nakamura in view of Clauer teaches the claimed invention as applied to claim 1 above. Nakamura in view of Clauer further teaches (in Figs. 1-2) and discloses said bridge side (20) irradiated with the laser [0021], and inherently is a region where a high stress occurs due to centrifugal force acting on a magnet when said rotor rotates.

11. Claim 3 is alternatively rejected under 35 U.S.C. 103(a) as being unpatentable Nakamura (JP 11018324, see attached English translation) in view of Clauer et al (US 2003/0024915) and in further view of Koharagi et al (US 2003/0057785).

As for claim 3, Nakamura in view of Clauer teaches the claimed invention as applied to claim 1 above. Nakamura in view of Clauer however is silent to show or disclose a magnet of said rotor for each pole is divided into a plurality of pieces. In the same field of endeavor, Koharagi shows (in Fig. 1) and discloses a magnet (10) of said rotor for each pole (four poles, in this instance) is divided into a plurality of pieces (two per each). Therefore, it would have been obvious to a person of ordinary skill in the art

Art Unit: 2834

at the time the invention was made to combine the teaching of Koharagi with that of Nakamura for predictable result of enhancing system efficiency by effectively utilizing reluctance torque. [0005, 0010]

12. Claims 4 and 5 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable Nakamura (JP 11018324, see attached English translation) in view of Clauer et al (US 2003/0024915) and in further view of Edwards et al (US 6848495).

As for claim 4, Nakamura in view of Clauer teaches the claimed invention as applied to claim 1 above. Nakamura in view of Clauer however is silent to show or disclose said bridge side has a step. In the same field of endeavor, Edwards shows (in Fig. 6) and discloses bridge of rotor slot side (506) has a step. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have bridge side has a step by combining the teaching of Edward with that of Nakamura for predictable result of preventing the leaking or seeping of the molten material from between the stacked laminations (col. 7, line 18-20).

As for claim 5, Nakamura in view of Clauer and in further view of Edwards teaches the claimed invention as applied to claim 4 above. Edwards further shows (in Figs. 6-7) and discloses said step (506) is located on one side or each side.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 2834

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN K. KIM whose telephone number is (571)270-5072. The fax phone number for the examiner where this application or proceeding is assigned is 571-270-6072. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on 571-272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 2834

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quyen Leung/
Supervisory Patent Examiner, Art Unit 2834

JK